Nearshore Disposal Pilot Research Project

Corps Dredge *Essayons*

September 14-15, 2005

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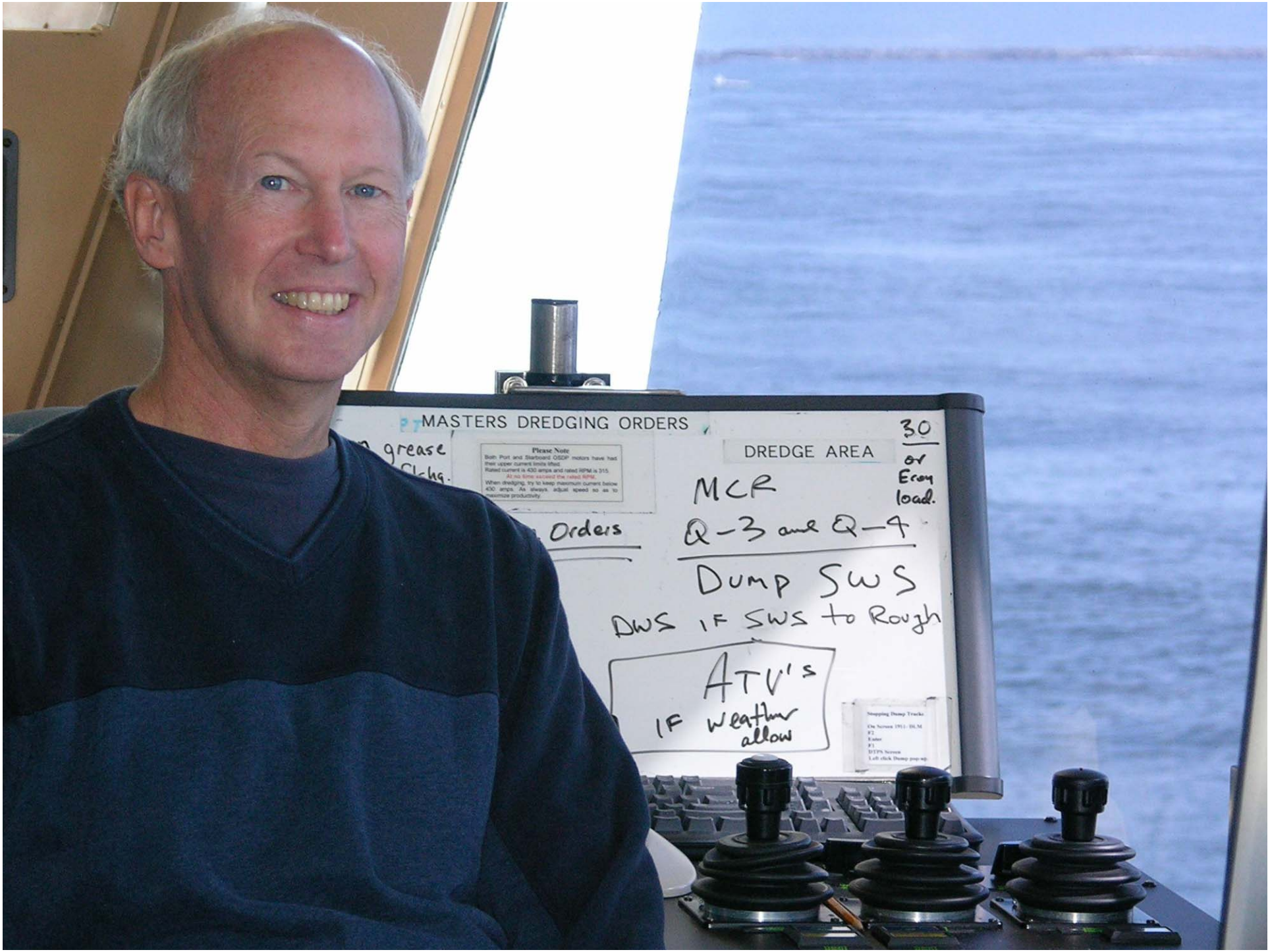
DIGITAL
DEPTH
INDICAT
to Pilot House
Heaters

COVER

003.6
FATH
MINIMUM DEPTH WARNING
DEPTH
BUZZER
ON
OFF

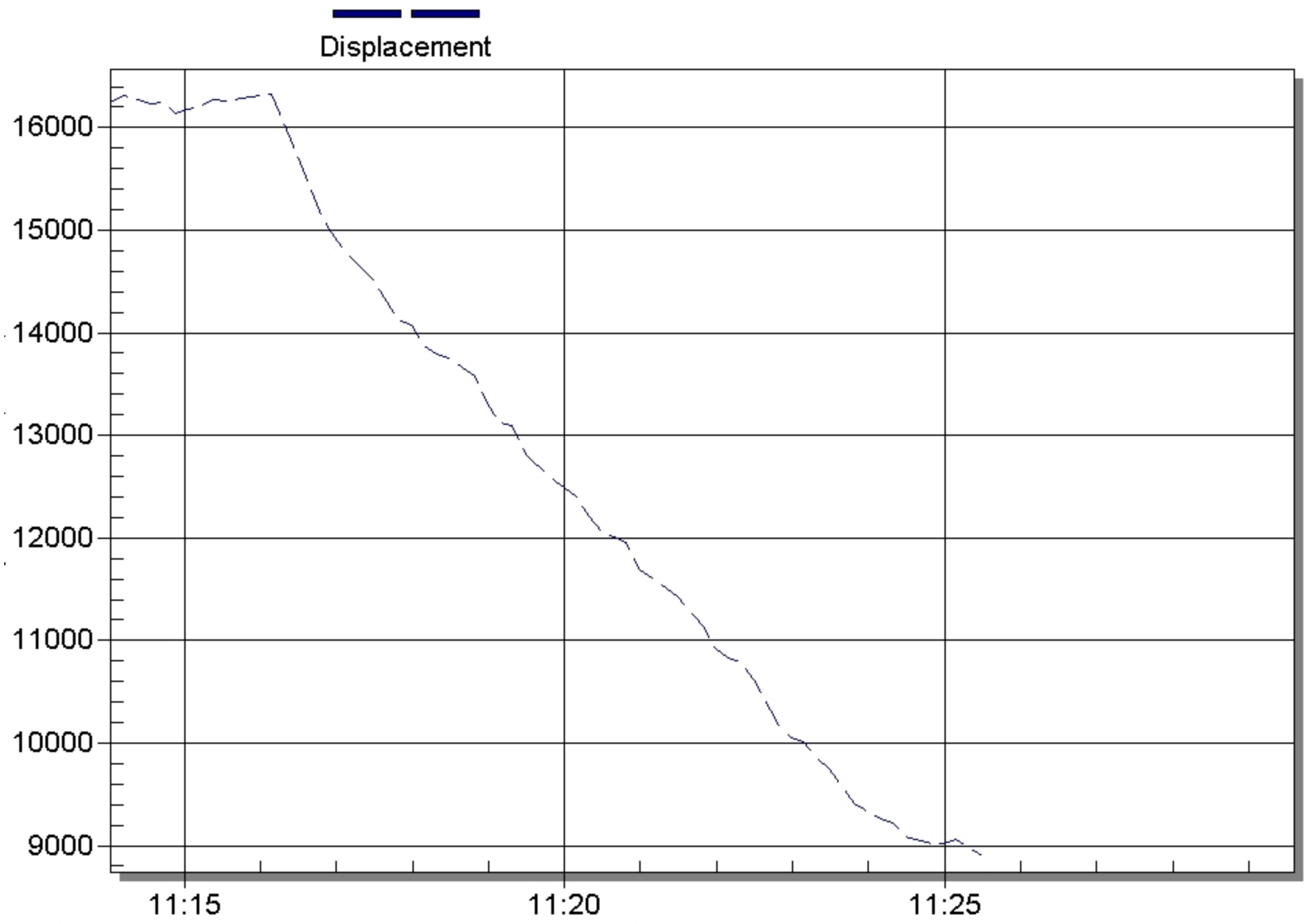

MASTERS DREDGING ORDERS
Please Note
DREDGE AREA
30
or
Eroy
load.
MCR
Orders
Q-3 and Q-4
Dump SWS
DWS IF SWS to Rough
ATV's
IF weather
allow

IRON LADY
618440

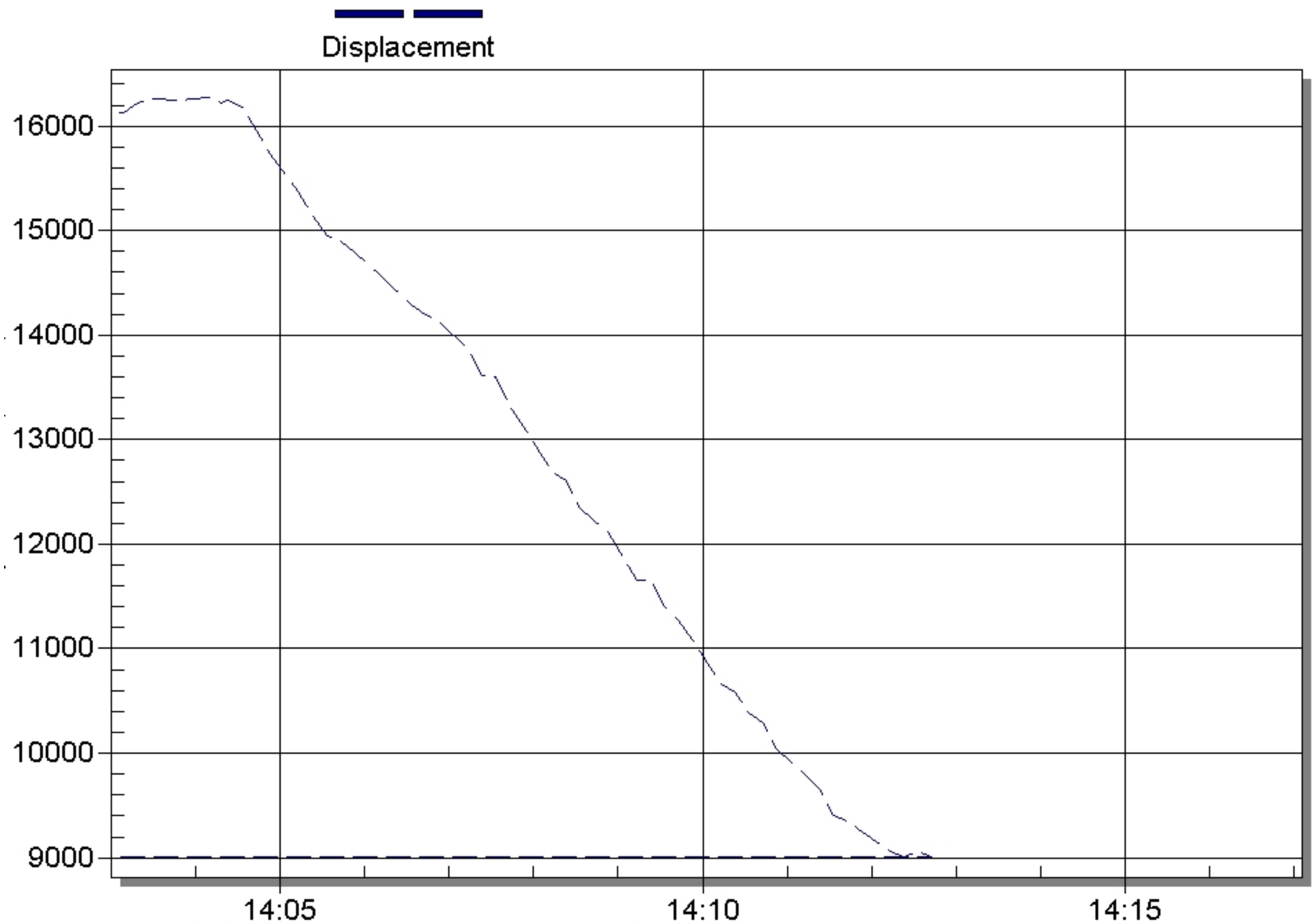
Results
Displacement versus Distance

- Enhanced Disposal
- Relatively Uniform Layer
- Speed 2-7.5 knots
- 8-10 minute runs

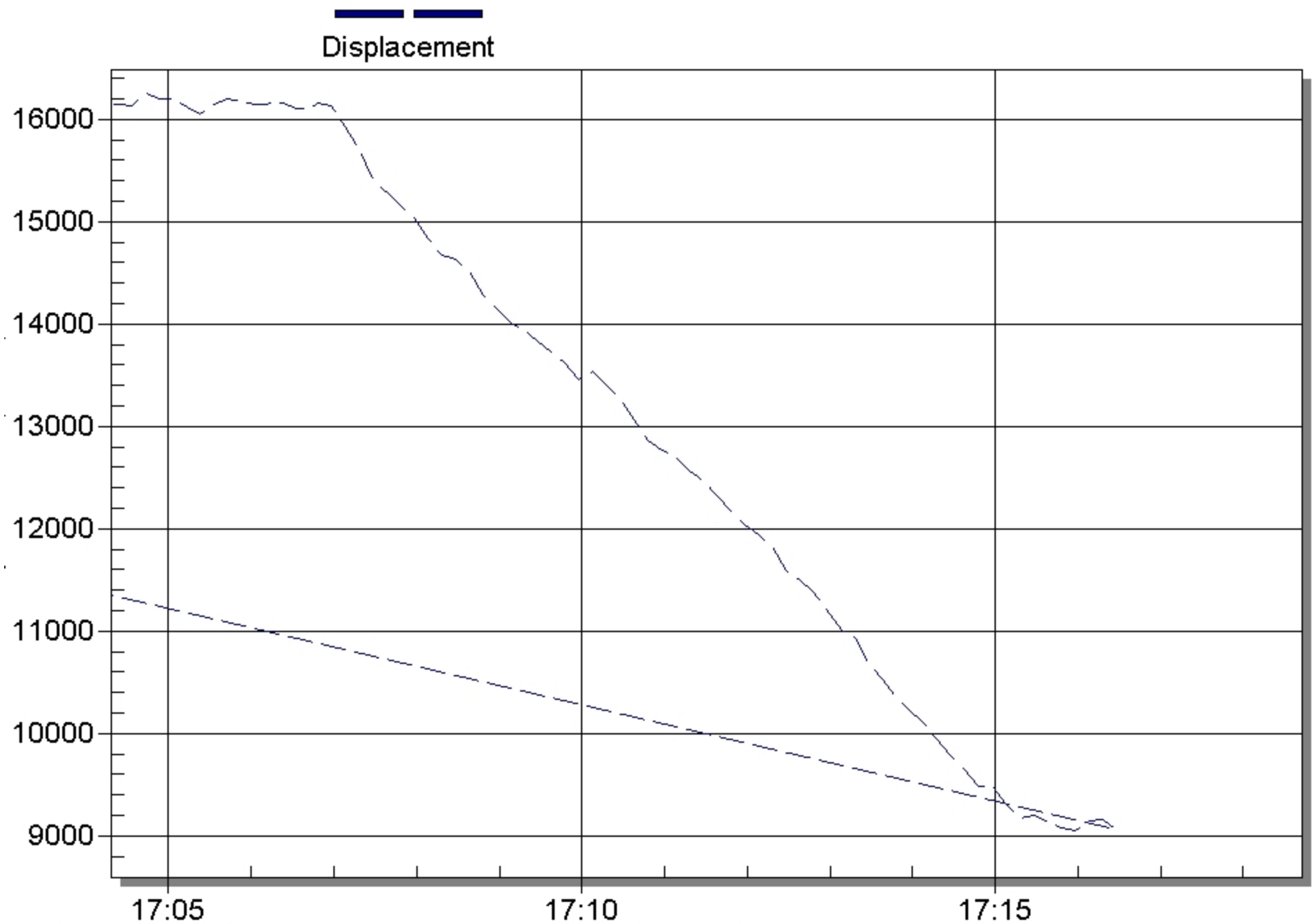
Dredge Essayons
Contract GDSNWP-05-G-0001



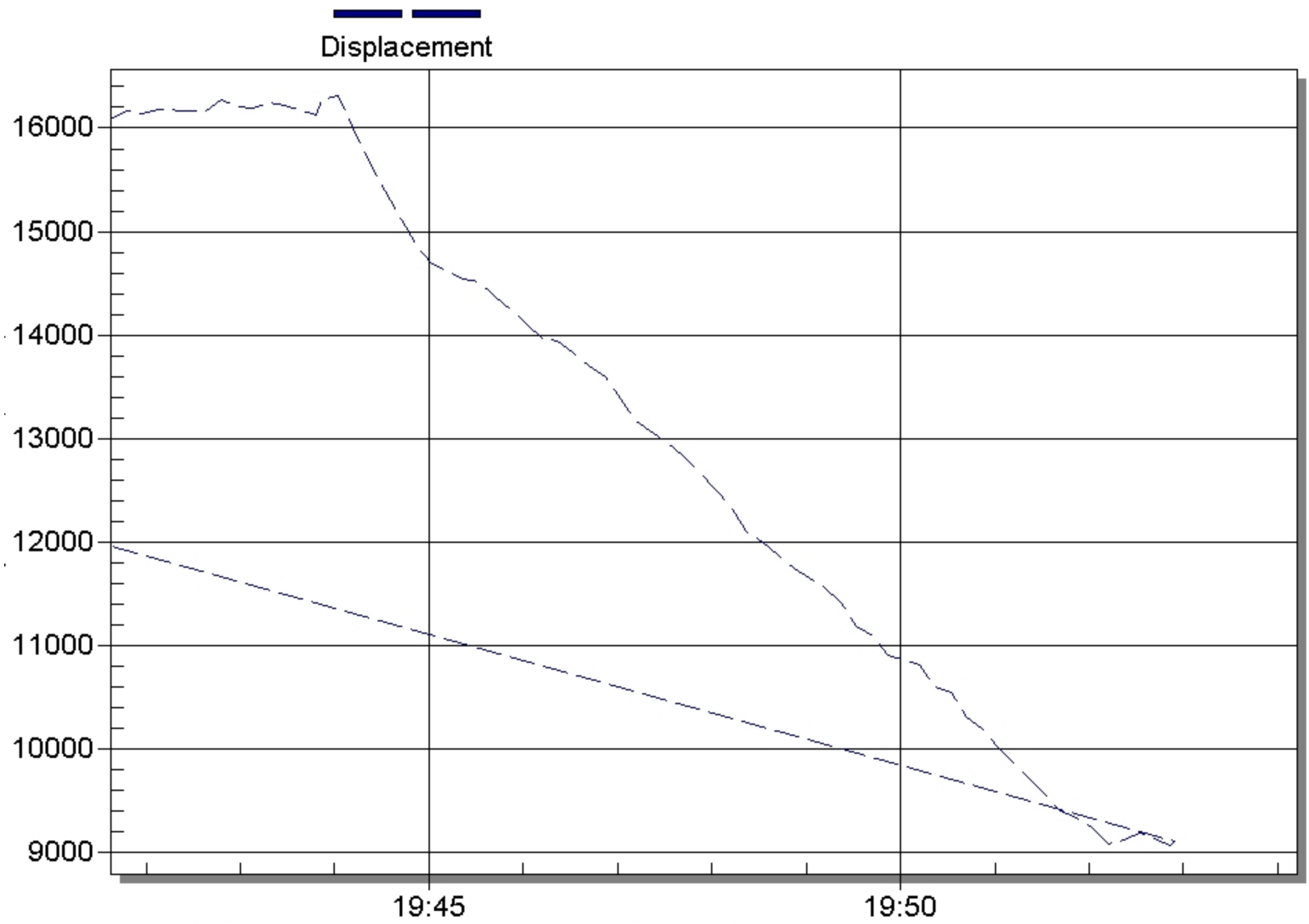
Dredge Essayons
Contract GDSNWP-05-G-0001



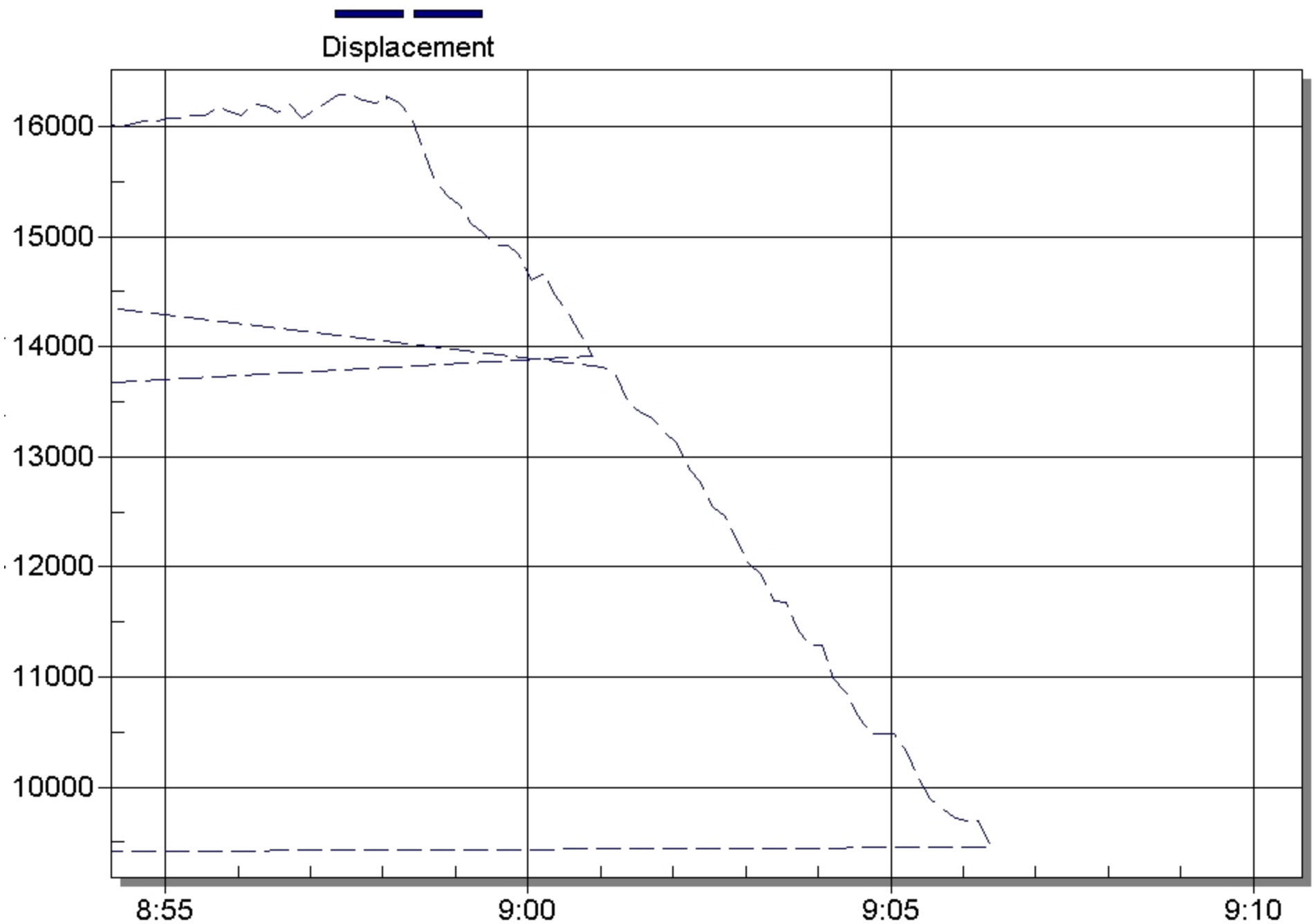
Dredge Essayons
Contract GDSNWP-05-G-0001



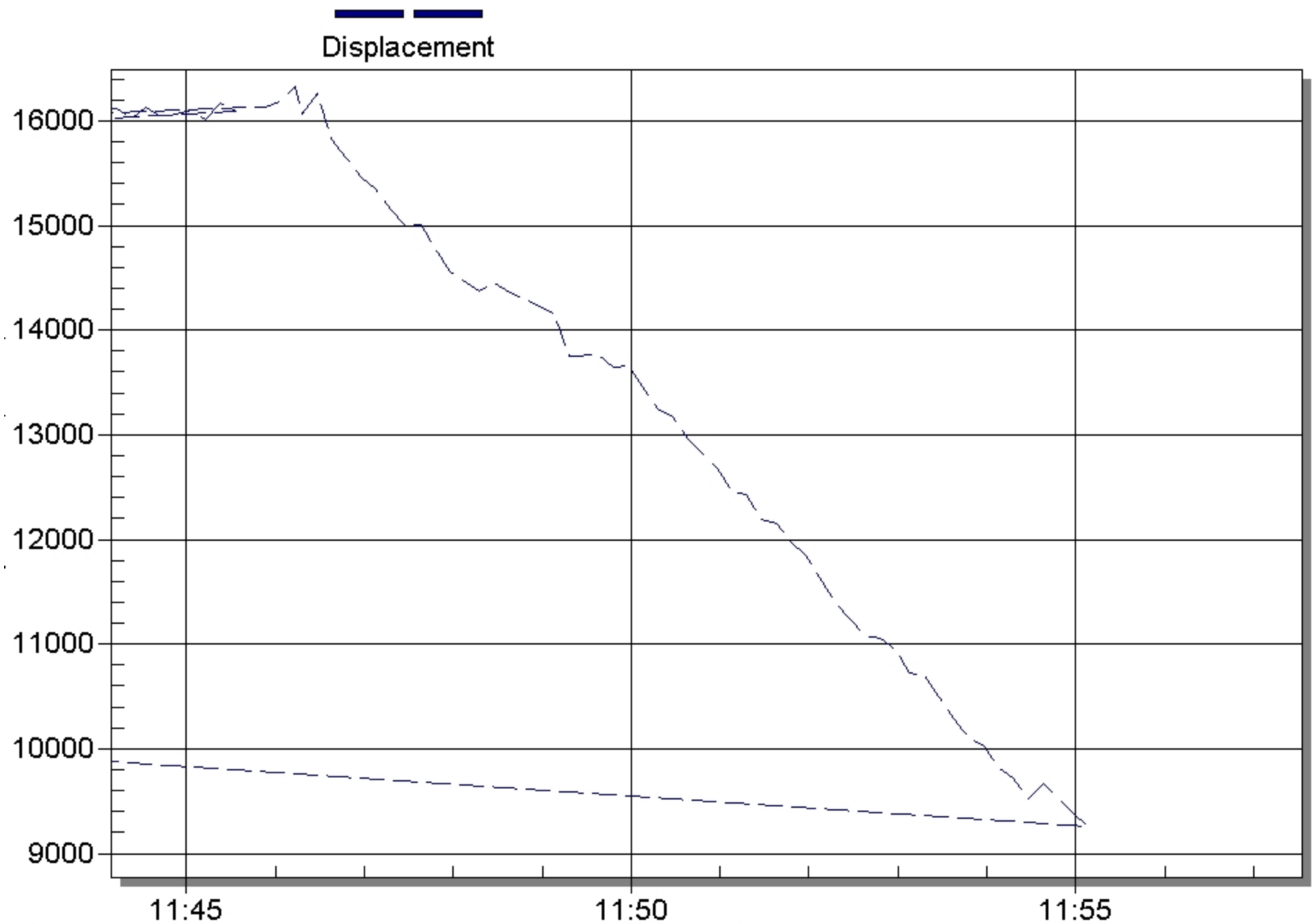
Dredge Essayons
Contract GDSNWP-05-G-0001



Dredge Essayons
Contract GDSNWP-05-G-0001



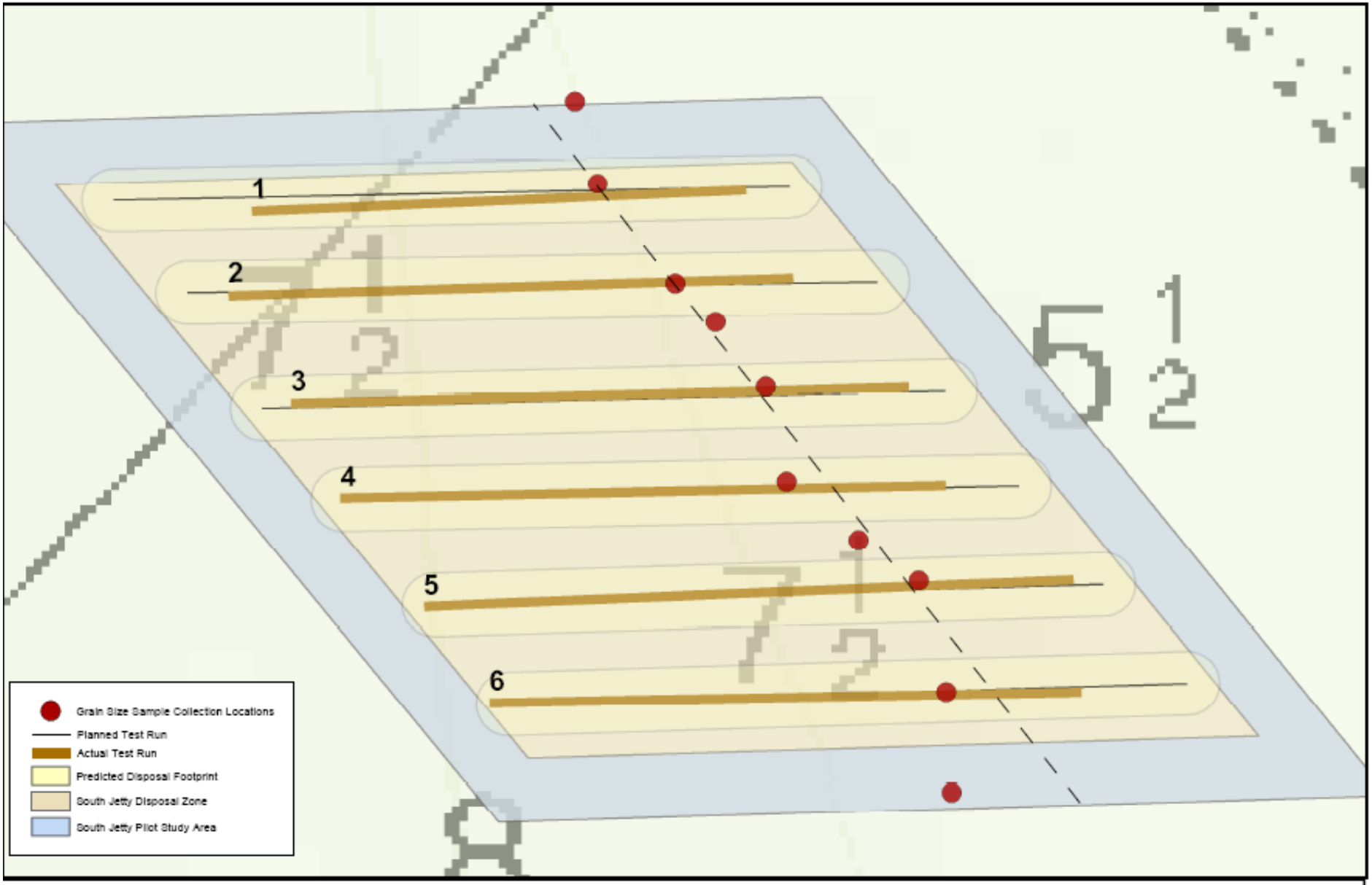
Dredge Essayons
Contract GDSNWP-05-G-0001



Results

Benthic Grab Samples

- Similar Composition
- Similar Grain Size



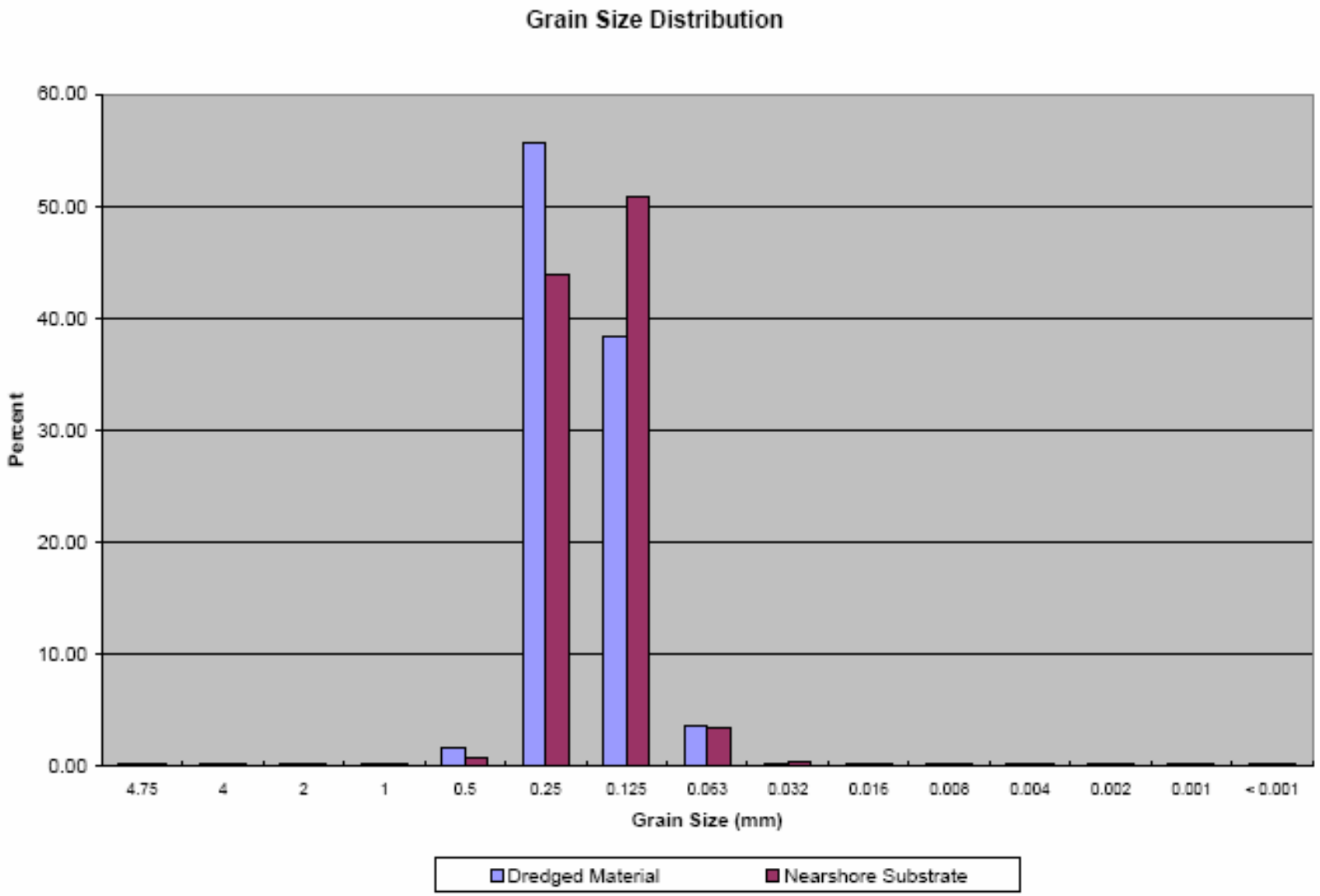
Projection: UTM
Zone:10
Units: meters
Datum:NAD83

0 0.125 0.25 0.5 0.75 1 Nautical Miles

Mouth of the Columbia River - South Jetty
Grain Size Sample Collection Locations

File:C:\0440_gis\MCR\graphics\2005\sept2005\weda\SouthJetty_GrainSize.mxd 1:150000

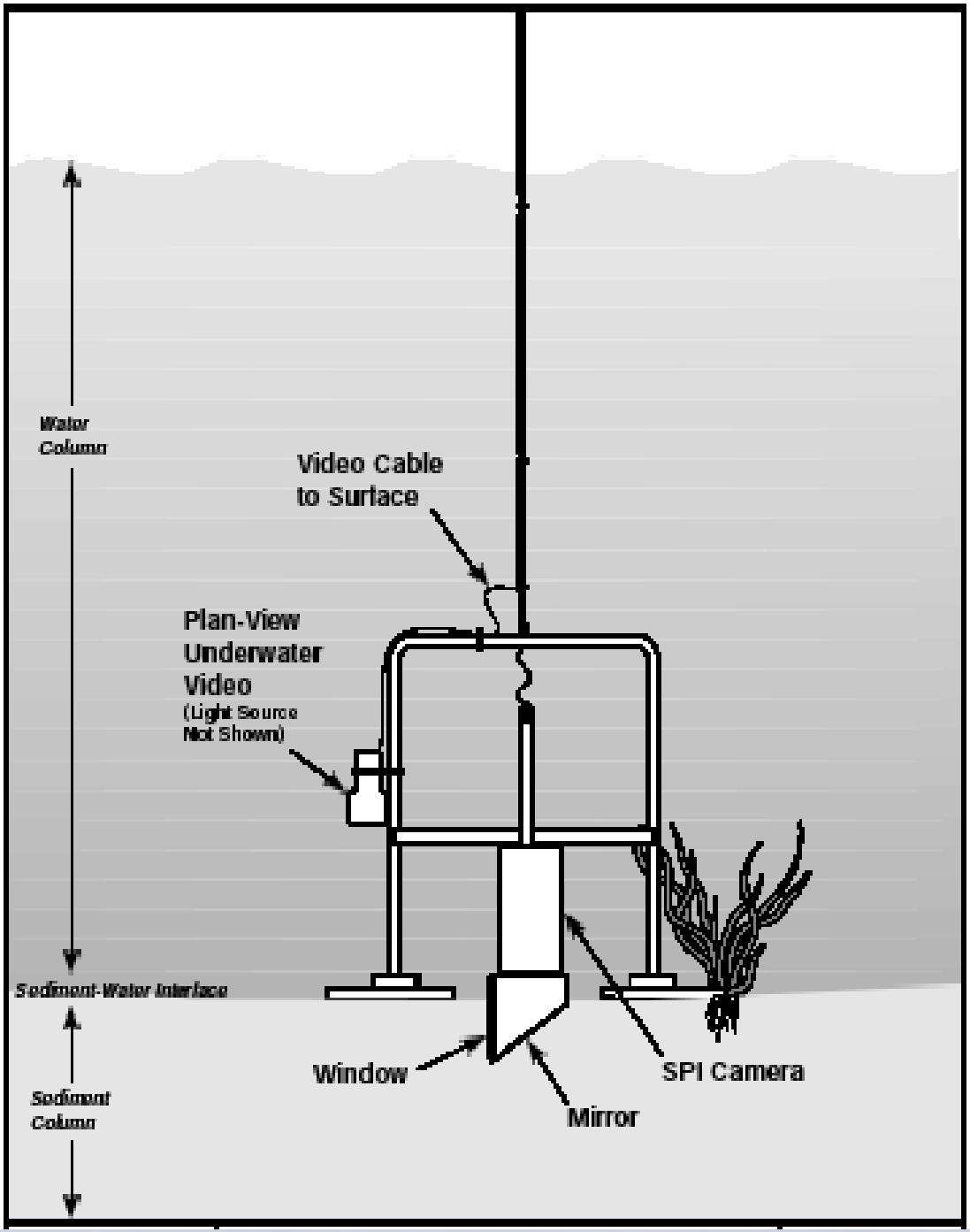
M.Goff, SAIC, October 2005

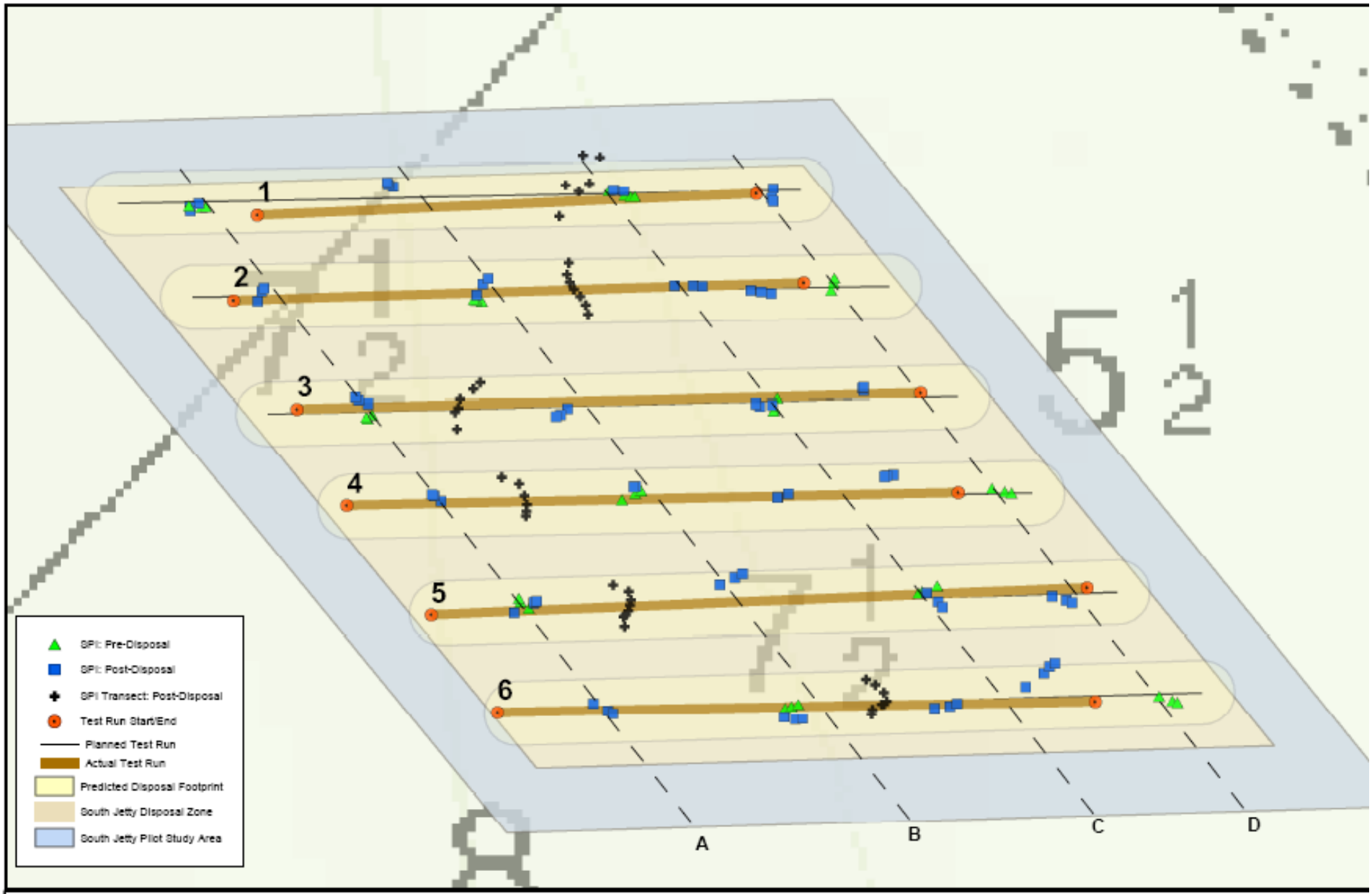

Grain Size Distribution
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
4.75
4
2
1
0.5
0.25
0.125
0.063
0.032
0.016
0.008
0.004
0.002
0.001
< 0.001
Grain Size (mm)
Dredged Material
Nearshore Substrate

Results

Sediment Profile Imaging (SPI)

- Penetration Same for Native and Dredged Material
- No discernable layer


Water Column
Video Cable to Surface
Plan-View Underwater Video
(Light Source Not Shown)
Sediment-Water Interface
Sediment Column
Window
Mirror
SPI Camera



Projection: UTM
Zone:10
Units: meters
Datum:NAD83

0 0.125 0.25 0.5 0.75 1 Nautical Miles

Mouth of the Columbia River - South Jetty
SPI Station Locations

File:C:\0440_gis\MCR\graphics\2005\sept2005\weda\SouthJetty_SPI.mxd 1:150000

M.Goff, SAIC, October 20

SPI Generalizations

- SPI grain size measurement shows slight difference
- Penetration less than 5 cm
- Can not distinguish new material from native
- Cannot discern any horizon in any sample
- All benthic habitat is same (pioneering) classification – no big surprise – its a high energy environment

Results

Multi-Beam Bathymetry

- Disposal layer too thin to detect
- Backscatter shows new material

Summary

- We suspect the layer is very thin
- MDFATE Modeling indicates Average Depth of 2.03 to 2.69 inches (4.8 inch maximum)
- The resultant habitat is indistinguishable from the original habitat
- Unanswered questions:
    1. What is a sustainable management approach?
    2. Where does the material go after it is deposited?
    3. How do we document long-term effects of enhanced disposal?
    4. Can nearshore placement be done in a manner so as to protect the jetty?
    5. What do we do next?